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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/758,434 | 01/14/2004 | Feisal Y. Daruwalla | CISCP134C1/8803 | 5662 |
| 22434 | 7590 | 05/27/2009 | | |
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| | | | ART UNIT | PAPER NUMBER |
| | | | 2416 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 05/27/2009 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/758,434

Applicant(s)

DARUWALLA ET AL.

Examiner

DEWANDA SAMUEL

Art Unit

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. This communication is responsive to the communication filed on 03/11/2009.

Claims 1-11 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-3 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fijolek et al. (US Patent 6,510,162) in view of view of Kompella. (US Patent 7,136,374).

With regard to claim 1, Fijolek et al. discloses having an apparatus for routing packets from a first network node to a second network node in a data network, (**Fijolek**

et al. discloses having a cable modem termination system 12 in fig .1 in a cable network that is routing data from a from a cable modem interpreted as first network node" back to a cable modem ("second network node ", fig. 5); comprising: means for assigning and the sending first node identifier (ID) to the first node, wherein the first node ID unique identifies the first node; **Fijolek et al. discloses having a cable modem termination system 12 in fig. 1 that assigns service identifiers (SIDs) interpreted as a unique "ID" to CM (cable modems) interpreted as a "first node" , see column 15 line 17-18). Fijolek et al. further discloses within MAC 44 SIDs are unique and the CMTS 12 may assign one or more SIDs to each CM 16, see col. 15 lines 14-20);** means for receiving a packet from the first node, said packet from the unique first node, said packet including the unique first node ID, and including routing information for routing said packet to a destination address associated with said second node,(**Fijolek et al. discloses having a packet format for a incoming packet being received form a CM (cable modem),see column 15 table 9 and 10 line 25-67);** means for examining the packet to identify the unique first node ID of the first node;(**Fijolek et al. discloses the cable modem termination system 12 (CMTS) have the means of examining incoming packets with service identifiers (SID), see column 15 lines 10-67). Fijolek et al. further discloses within MAC 44 SIDs are unique and the CMTS 12 may assign one or more SIDs to each CM 16, see col. 15 lines 14-20);** and means for using said unique first node ID, routing information (**Fijolek et al. discloses having a unique service identifier (SID) corresponding to a cable modem (CM) and the SID and routing information**

transmitted in a packet. Fijolek et al. further discloses within MAC 44 SIDs are unique and the CMTS 12 may assign one or more SIDs to each CM 16, see col. 15 lines 14-20).

However, the combination Fijolek et al. '162 does not discloses first node is associated with at least one VPN; mapping between the first node ID and the least one VPN, (**Kompella discloses configuring virtual private network identifiers interpreted as a "VPN" associated with customer edge devices identifier 1022 interpreted as " node address" , see col.13 lines 52-67 and fig. 10).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to associating a VPN identifier to a customer edge device as taught by Kompella into of Fijolek et al. system to provide a more scalable VPN infrastructure.

With regard to claim 2, in combination Fijolek et al. ,and Kompella teaches the apparatus recited in claim 1 .Further comprising means for routing the packet to the second node, (Fijolek et al. discloses in fig. 1 that the cable modem termination system 12 (CMTS) has the means to transmit a packet to a second CM (cable modem)interpreted as a "second node").

With regard to claim 3, an apparatus for associating nodes in a data network with at least one virtual private network (VPN), the data network including an access network having at least one Head End device and a plurality of nodes the access network further including at least one shared access channel utilized by a first and a second node of the plurality of nodes to communicate with the Head End device, said apparatus comprising: means for assigning and then sending a first node ID to the first node,(**see fig. 1, Fijolek et al. discloses having a headend and a cable modem and a CPE interpreted as “plurality of nodes”. Fijolek et al discloses having a CMTS 12 assigning MAC 44 service identifier (SID) interpreted as “first node ID”, see col. 36 lines 49-62**); means for receiving a-data from the first node in the access network, (**see fig.1**) ; means for identifying, within the received data, the address and first node ID of the first node; and means for using said identified address,(**Fijolek et al. discloses CM 16 has assigned IP address being identified, see col. 22 lines 10. Fijolek et al. further discloses MAC address 44 as a client address, see col. 18 lines 15-19**).

However, Fijolek et al. does not disclose having the means for mapping the assigned first node ID with at least one VPN, wherein the first node ID is assigned, sent, and mapped by an entity other than the first node; means for receiving an address for the first node that is associated with at least one VPN; and the mapping between the first node ID and the at least one VPN to determine whether said first node is

associated with at least one VPN, (**Kompella discloses configuring virtual private network identifiers interpreted as a "VPN" associated with customer edge devices identifier 1022 interpreted as " node address" , see col.13 lines 52-67 and fig. 10).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to associating a VPN identifier to a customer edge device as taught by Kompella into of Fijolek et al. system to provide a more scalable VPN infrastructure.

With regard to claim 10, a apparatus for configuring a Head End of an access network to route packets from a first node to a second node in the access network, **Fijolek et al. discloses having a cable modem termination system 12 in fig 1 located in a head end of cable system 26 (fig. 1). the apparatus comprising: means for associating particular network nodes on the, access network with a first virtual private network (VPN) ; Fijoleck et al. further discloses having a virtual networking administration in a data-over-cable-system 10 (column 28 line 18-19); the means for assigning and then sending to the first node an unique identifier (ID), wherein the unique ID is assigned and sent to the first node by an entity other than the first node, wherein the unique ID uniquely identifies the first node; Fijolek et al. discloses having a cable modem termination system 12 in fig. 1 that assigns**

service identifiers (SIDs) to CM (cable modems, column 15 line 17-18). . Fijolek et al. '162 further discloses within MAC 44 SIDs are unique and the CMTS 12 may assign one or more SIDs to each CM 16, see col. 15 lines 14-20); the means for associating the assigned ID with the first VPN to thereby cause the first node to be associated with the first VPN, wherein the assigned ID is associated by the entity other than the first node. Fijolek et al. (6,577,642) discloses having a cable modem termination system 12 in fig. 1 that assigns service identifiers (SIDs) to CM (cable modems, column 15 line 17-18).

However, Fijolek et al. means for mapping the assigned unique ID with at least on VPN, wherein the unique ID is assigned, sent and mapped by an entity other than the first node, (**Kompella discloses configuring virtual private network identifiers interpreted as a "VPN" associated with customer edge devices identifier 1022 interpreted as " node address" , see col.13 lines 52-67 and fig. 10).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to associating a VPN identifier to a customer edge device as taught by Kompella into of Fijolek et al. system to provide a more scalable VPN infrastructure.

5. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fijolek et al. (US Patent 6,986,157) and Kompella. (US Patent 7,136,374) as applied to claim 3 above, and further in view of Rosen et al. ("BGP/MPLS VPNs' 1999).

With regard to claim 4, in combination Fijolek et al. and Kompella teaches the apparatus in claim 3. further comprising means for mapping said first node to a particular sub-interface on the access network, ,(**Rosen et al. discloses having a method in which a service provider with a IP backbone may provide VPNs (Virtual Private Networks) for its customers with MPLS (Multiprotocol Label Switching) is used for forwarding packets over the backbone (Abstract). Rosen et al. discloses that one could divide the interface into multiple "sub-interfaces"... and assign the packets to a VPN based on the on the sub-interface over which it arrives (page 7 paragraph 3.1 line 11-17). I t is inferred that this mechanism can be implemented in the node of the data-over-cable-system and that the head end also can limited to a particular VPN.**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a virtual networking administration in a data-over-cable-system 10 as taught by Fijolek et al. assign the packets to a VPN based on the on the sub-interface over which it arrives as taught by Rosen et al. to provide a mechanism that will restrict packets access into VPNs that are not assigned to the

packet.

6. **Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fijolek et al. (US Patent 6,577,642) in view of f Rosen et al. ("BGP/MPLS VPNs" 1999) and Kompella. (US Patent 7,136,374)

With regard to claim 5, Fijolek et al. discloses an apparatus for associating nodes in a data network with at least one virtual private network (VPN), the data network including an access network having at least one Head End device and a plurality Of nodes, the access network further including at least one shared access channel utilized by a first and a second node of the plurality of nodes to communicate with the Head End device, **(Fijolek et al. discloses having a cable modem termination system 12 in fig 1 located in a head end of cable system 26 (fig. 1). It is conventional that a cable modem termination system can operate as point-to-point or point-to- multipoint and that the cable modem are bi-directionally communicating with the head end. Fijolek et al. discloses having a virtual networking administration in a data-over- cable-system 10 using a network address and the first virtual networking tag stored in a virtual networking table associated with the second network device to provide selected first network devices a desired networking service on a virtual network via the data- over- cable-system (column 28 line 34-43); assigning and then sending an unique identifier**

(ID) to the first node and binding the unique ID of said first node wherein the unique ID is assigned, sent and then bound by an entity other than the first node, wherein the ID unique identifies the first node. **Fijoleket al. discloses having a cable modem termination system 12 in fig. 1 that assigns service identifiers (SIDs) to CM (cable modems, column 15 line 17-18). Fijolek et al. further discloses having method and system for virtual network administration with data-over cable system (tile). In addition, Fijolek et al. discloses first networking devices includes a virtual network tag (" mapping at least on VPN") and a network address("first node ID", column 28 line 22-43).**

Fijolek et al. does not discloses said apparatus comprising: means for determining whether said first node is a member of at least one VPN, (**Rosen et al. discloses having a method in which a service provider with an IP backbone may provide VPNs (Virtual Private Networks) for its customers with MPLS (Multiprotocol Label Switching) is used for forwarding packets over the backbone (Abstract). It is inferred that this mechanism can be implemented in the head end of a cable system 26. Rosen et al. further discloses assigning packets to a particular site (page 7 line 12-13)...also a packet's destination address, is matched against a VPN-Ipv4 route ("page 8 line 49-51). It is inferred that the packets contains the information of the device or node from which it came from).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a virtual networking administration in a data-over-cable-system as taught by Fijolek et al. matching a destination address against a VPN-Ipv4 route as taught by Rosen to provide a mechanism that will transmit packets to a specific VPN.

However, the combination of Fijolek et al. and Rosen does not disclose mapping between the first node ID and the least one VPN(**Kompella discloses configuring virtual private network identifiers interpreted as a "VPN" associated with customer edge devices identifier 1022 interpreted as " node address" , see col.13 lines 52-67 and fig. 10).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to associating a VPN identifier to a customer edge device as taught by Kompella into Fijolek et al. modified system , combined with Rosen to provide a more scalable VPN infrastructure.

With regard to claim 6, in combination Fijoleck et al. and Kompella teaches the apparatus recited in claim 5. However, Fijoleck et al. does not disclose means for mapping a particular sub-interface of the Head End to said particular VPN,(**Rosen et al. discloses having a method in which a service provider with a IP backbone may**

provide VPNs (Virtual Private Networks) for its customers with MPLS (Multiprotocol Label Switching) is used for forwarding packets over the backbone (Abstract). Rosen et al. discloses that one could divide the interface into multiple "sub-interfaces" ... and assign the packets to a VPN based on the on the sub-interface over which it arrives (page 7 paragraph 3.1 line 11-17). It is inferred that this mechanism can be implemented in the head end of the data-over-cable-system and that the head end also can limited to a particular VPN.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a virtual networking administration in a data-over-cable-system 10 as taught by Fijolek et al. assign the packets to a VPN based on the on the sub-interface over which it arrives as taught by Rosen et al. to provide a mechanism that will restrict packets access into VPNs that are not assigned to the packet.

7. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fijolek et al. (US Patent 6,577,642) and Rosen et al. ("BGP/MPLS VPNs" 1999) and Kompella. (US Patent 7,136,374) as applied to claim 5 above, and further in view of Gilbrech (US Patent 6,173,399).

With regard to claim 7, in combination Fijolek et al. and Kompella teaches the apparatus recited in claim 5. further comprising: means for receiving at said Head End

device a packet from said first node, said packet including a destination address corresponding to a second node in the network, **Fijolek et al. discloses having a head end of a cable system 26 in fig.1 which has the means to send and receive packets from cable modems...**, such configurations may be "one-to-one", "one-to-many" or "many-to- many" (column 7 line 20-38). **Fijolek et al. further discloses having means for examining said packet to identify the ID of said first node; Fijolek et al. discloses the cable modem termination system 12 (CMTS) have the means of examining incoming packets with service identifiers (SID, column 15 line10-67); and means for using said ID at said Head End device to determine whether said first node is a member of at least one VPN, (Fijoleck et al. discloses having a cable modem termination system 12a-c... also Fijoleck et al discloses a cable television network headend is a central location (column 4 line 33-34).**

However, Fijoleck et al. does not disclose first node is a member of at least one VPN. **Gilbrech discloses having a VPN unit processing packet by examining the source and destination address of the packet. Gibrech fulther discloses the VPN unit moderates data communication between members of a defined VPN group (column 2 line 45-48) and the VPN unit maintains a lookup table identifying members of a specific virtual private network groups. It is inferred that the VPN unit keeps record of an identifier of member in a table and each identifier is link to a virtual private network groups.**

With regard to claim 8, in combination Fijoleck et al., Kompella, Rosen et al. and Gilrech teaches the apparatus recited in claim 7. However, Fijoleck et al. does not disclose that the first node is a member of a first VPN, determining at said Head End device whether the destination address of said packet is within said first VPN,(**Rosen et al. discloses having a method in which a service provider with an IP backbone may provide VPNs (Virtual Private Networks) for its customers with MPLS (Multiprotocol Label Switching) is used for forwarding packets over the backbone (Abstract). It is inferred that this mechanism can be implemented in the head end of a cable system 26. Rosen et al. further discloses when a packets destination address interpreted as “destination address” is matched against a VPN-IPv4 route interpreted as” first VPN” , see page 8 line 49-51).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a virtual networking administration in a data-over-cable-system 10 as taught by Fijoleck et al. matching packets destination address against a VPN-IPv4 route (VPN) as taught by Rosen et al. to provide a mechanism that will restrict packets from entering in VPNs that they are not associated with.

With regard to claim 9, in combination Fijoleck et al., Kompella, Rosen et al. and Gilrech teaches the apparatus recited in claim 7.further comprising means for routing the packet to the second node,(**Fijoleck et al. discloses having a having a head end of a cable system 26 with a cable modem termination system 12 in fig. 1**

routing packets to a cable modem and the system configurations may be "one-to-one", "one-to-many" or "many-to-many" interpreted as "routing to a second node", see column 7 line 20-38 and fig. 1). It is inferred that the head end have the capability to route packets to other cable modems in the network.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a to a cable modem termination system 12 (CMTS) assigning a unique identifier SID within a packet as taught by Fijolek et al. being examined a VPN unit that associates identifying members with a virtual private network groups as taught by Gilbrech to provide a more secure cable network.

8. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fijolek et al. (US Patent 6,577,642) and Kompella. (US Patent 7,136,374) as applied to claim 10 above, and further in view of Rosen et al. ("BGP/MPLS VPNs '1999).

With regard to claim 11, in combination Fijolek et al. and Kompella teaches the apparatus recited in claim 10. However, Fijolek et al. does not disclose means for including mapping a particular sub-interface of the Head End to the first VPN. **(Rosen et al. discloses that one could divide the interface into multiple "sub-interfaces" and assign the packets to a VPN based on the on the sub-interface over which it arrives (page 7 paragraph 3.1 line 11-17).It is inferred that this mechanism can be**

implemented in the head end of the data-over- cable-system and that the head end also can limited to a particular VPN.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a virtual networking administration in a data-over-cable-system as taught by Fijolek et al. assign the packets to a VPN based on the on the sub-interface over which it arrives as taught by Rosen et al. to provide a mechanism that will restrict packets access into VPNs that are not assigned to the packet.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEWANDA SAMUEL whose telephone number is (571)270-1213. The examiner can normally be reached on Monday- Thursday 8:30-5:30 EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DeWanda Samuel/

Examiner, Art Unit 2416

5/26/2009

/Ricky Ngo/

Supervisory Patent Examiner, Art Unit 2416